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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,247	06/20/2003	Xia Tang	02-641/EH-10787	6688
34704	7590	11/16/2005	EXAMINER	
BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			ZHENG, LOIS L	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/601,247	TANG ET AL.	
	<b>Examiner</b> Lois Zheng	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 28 August 2005.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 3 and 5-12 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 3 and 5-12 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a))

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 3, 5-7 and 9-10 are amended in view of the amendment filed on 28 August 2005. Claims 1-2 and 4 are cancelled in view of the amendment. New claims 11-12 are added. Therefore, claims 3 and 5-12 remain under examination.

### ***Terminal Disclaimer***

2. The terminal disclaimer filed on 28 August 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of co-pending application 10/073,688 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Status of Previous Rejections***

3. The rejection of instant claim 1 under 35 U.S.C. 103(a) as being unpatentable over Matsushima et al. US 4,017,334(Matsushima) in view of Briles et al. US Patent Application Publication 2003/0150525(Briles) is withdrawn in view of the Terminal Disclaimer and Statement of Ownership filed 28 August 2005.

The rejections of instant claim 3 and 5-10 under 35 U.S.C. 103(a) as being unpatentable over Matsushima in view of Briles are withdrawn in view of the Terminal Disclaimer and Statement of Ownership filed 28 August 2005.

The rejections of instant claim 1, 3 and 5-10 under 35 U.S.C. 103(a) as being unpatentable over Briles in view of Tomlinson US 5,380,374(Tomlinson) are withdrawn in view of the Terminal Disclaimer and Statement of Ownership filed 28 August 2005.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bengston et al. US 6,692,583 B2(Bengston) in view of Tomlinson.

Bengston teaches a process of applying a conversion coating composition to magnesium or magnesium alloy(Abstract). The conversion coating composition comprises phosphate ions, fluoride ions and vanadate ions(col. 2 lines 19-33).

However, Bengston fails to explicitly teach the addition of claimed organo-phosphonic acid as corrosion inhibitor as recited in instant claim 7.

Tomlinson teaches a conversion coating method for treating aluminum, ferrous and magnesium alloys(Abstract, col. 2 lines 17-21). The coating solution comprising fluoride and phosphates(Abstract). Tomlinson further teaches the addition of a crystal deformation agent such as nitrilotris(methylene) triphosphonic acid(NTMP) in a preferred amount of 50-200ppm(Abstract, col. 5 lines 23-30, claim 24).

Regarding instant claims 7 and 3, it would have been obvious to one of ordinary skill in the art to have incorporated 50-200ppm nitrilotris(methylene) triphosphonic acid(NTMP) as taught by Tomlinson into the coating solution of Bengston in order to provide a more uniform coating surface texture and to enhance paint adhesion as taught by Tomlinson (col. 5 lines 23-28). Therefore, the NTMP as taught by Bengston

in view of Tomlinson reads on the claimed active corrosion inhibitor. In addition, the claimed formation of insoluble salt by the reaction of phosphonic acid and magnesium metal is inherently taking place by the process of Bengston in view of Tomlinson.

Regarding instant claims 5 and 9, the NTMP as taught by Bengston in view of Tomlinson is in the amount of 50-200ppm, which read on the claimed 1ppm – 1wt% and 10ppm – 0.5wt% as recited in instant claims 5 and 9.

Regarding instant claims 6, 10 and 11, Bengston further discloses the phosphate ions come from phosphoric acid in the amount of about 10 – about 200g/l(col. 2 lines 53-61). The fluoride ions are present in the amount of about 0.1 – about 200g/l(col. 3 lines 11-20). Therefore, the phosphate and fluoride ion concentrations of Bengston in view of Tomlinson encompasses the claimed phosphate and fluoride ion concentrations as recited in instant claims 6, 10 and 11. A *prima facie* case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate fluoride concentration ranges from disclosed range of Bengston in view of Tomlinson would have been obvious to one skilled in the art since Bengston in view of Tomlinson teach the same utilities in their disclosed phosphate and fluoride concentration ranges.

Regarding instant claim 8, the coated magnesium or magnesium alloy substrate of Bengston in view of Tomlinson meets all the claim limitations as recited in instant claim 8.

Regarding instant new claim 12, Tomlinson further teaches that pH level can be adjusted by adding acids such as HNO<sub>3</sub>(col. 3 lines 57-60). In addition, the lower pH level associated with higher metal or acid concentration in the coating solution can lead

to heavier coating. Therefore, it would have been obvious to one of ordinary skill in the art to have routinely optimized the pH of the coating solution by adjusting the metal or acid concentration in the coating solution to arrive at the claimed pH value of 5-7 depending on the desired coating thickness.

6. Claims 3 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima in view of Oppen et al US 4,264,378(Oppen), and further in view of Tomlinson.

Matsushima discloses a process for treating aluminum with a coating solution comprising phosphate and fluoride (abstract). The coating solution may also include a polyphosphoric acid (i.e. organo-phosphonic acid, ) such as 2-ethylhexyl acid phosphonic acid (i.e. straight or branched alkyl phosphonic acid) (col. 3 line 65 – line 4 line 11) .

However, Matsushima does not teach the claimed vanadate ions in the coating solution and the coating is applied to magnesium or magnesium alloy substrate as recited in amended claim 7.

Oppen teaches a conversion coating composition for phosphatizing aluminum surfaces (abstract, col. 4 lines 1-6). Oppen's coating composition comprising phosphate ions, fluoride ions and vanadate ions (col. 2 lines 42 – 67).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the addition of vanadate ions as taught by Oppen into the coating solution of Matsushima in order to achieve high anti-corrosive protection and good adhesion properties as taught by Oppen (col. 4 lines 16-23).

The teachings Tomlinson are discussed in paragraph 5 above.

Therefore, it would have been obvious to one of ordinary skill in the art to have applied the coating solution of Matsushima in view of Oppen to a magnesium or magnesium alloy since Tomlinson teaches a phosphate, fluoride and organophosphonic acid containing coating solution can be applied to both aluminum and magnesium surfaces(col. 2 lines 17-21).

Regarding instant claim 7, the instant invention does not distinguish over the teachings of Matsushima in view of Oppen and Tomlinson.

With respect to claim 3 of the instant invention, it would have been obvious to one of ordinary skill in the art to have incorporated 50-200ppm nitrilotris(methylene) triphosphonic acid as disclosed by Tomlinson into the coating solution of Matsushima in view of Oppen as the organo-phosphonic acid in order to provide a more uniform coating surface texture and to enhance paint adhesion as taught by Tomlinson(col. 5 lines 23-28)

With respect to claim 5 and new claim 9 of the instant invention, the amount range of 50-200ppm of NTMP as disclosed by Matsushima in view of Oppen and Tomlinson reads the claimed 10ppm to 0.5 wt% of corrosion inhibitor as recited in instant claims 5 and 9.

With respect to claim 6 and new claim 10 of the instant invention, Matsushima further teaches that the fluoride concentration should be in the range of 0.1 – 10g/l and the phosphate concentration should be in the range of 0.05 – 50g/l(col. 3 lines 54-64), which substantially overlap the claimed 1-50g/l of phosphate ions and 1-10g/l of fluoride

ions. Therefore, the concentrations of phosphate ions and fluoride ions in the coating solution of Matsushima in view of Oppen and Tomlinson meet the limitations of instant claims 6 and 10.

With respect to claim 8 of the instant invention, the coated magnesium alloy substrate prepared by the coating method of Matsushima in view of Oppen and Tomlinson would meet all the limitations of instant claim 8.

Regarding new claim 11, Matsushima further teaches that the fluoride concentration should be in the range of 0.1 – 10g/l and the phosphate concentration should be in the range of 0.05 – 50g/l (col. 3 lines 54-64), which encompass the claimed 10-25g/l of phosphate ions and 3-5g/l of fluoride ions as recited in instant claim 11. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate and fluoride concentration ranges from the disclosed range of Matsushima in view of Oppen and Tomlinson would have been obvious to one of ordinary skill in the art since Matsushima in view of Oppen and Tomlinson teach the same utilities in their phosphate and fluoride concentration ranges.

Regarding new claim 12, Matsushima further teaches that the pH of the coating solution is in the range of 1.2-5.5 (col. 4 lines 14-16), which overlaps the claimed pH value of 5-7. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed pH value range from the disclosed range of Matsushima in view of Oppen and Tomlinson would have been obvious to one of ordinary skill in the art since Matsushima in view of Oppen and Tomlinson teach the same coating utilities in their pH value range.

***Response to Arguments***

7. Applicant's arguments with respect to Bengston have been considered but are not persuasive.

In the remarks, applicant argues that Bengston requires nitrate ions in the coating solution.

The instant claims use open transitional phrase "comprising" which implies that the coating composition may contain other components even upto significant amounts. Therefore, Bengston's nitrate containing coating solution in view of Tomlinson still meets the limitation of the instant invention. The examiner does not find applicant's argument persuasive.

8. Applicant's arguments with respect to Tomlinson have been considered but are not persuasive.

In the remarks, applicant argues that Tomlinson teaches that nitrilotris (methylene) triphosphonic acid is used to promote crystal of titanium, zirconium and hafnium in the coating, not to promote the interaction of vanadium with the corrosion coating.

The examiner does not find applicant's argument persuasive. Tomlinson teaches adding phosphates to the coating solution can improve the quality of the coating. In fact, Tomlinson teaches that the amount of phosphate added can be in comparable amounts as titanium, zirconium and hafnium(claim 1 and claim 10). Therefore, the conversion coating of Tomlinson contains significant amount of phosphate. In addition, the organophosphonic acid such as nitrilotris (methylene)

triphosphoric acid is added as crystal deformation additives to reduce the crystal size of the coating and enhances the coating uniformity and paint adhesion (col. 5 lines 23-30). Therefore, the organophosphonic acid is not added to promote the crystals of titanium, zirconium or hafnium, the organophosphonic acid as taught by Tomlinson is added to reduce the crystal size of the coating. In addition, since Tomlinson's coating contains significant amount of phosphate, the conversion coating would inherently contain significant amount of phosphate. One skill the artisan would have realize that the organophosphonic acid is a crystal deformation agent for the conversion coating as a whole, which includes phosphate. Since both Bengston and Tomlinson teach a conversion coating composition comprising phosphate and fluoride, one of ordinary skill in the art would have find it obvious to have incorporated the crystal deformation agent such as NTMP of Tomlinson into the coating composition of Bengston in order to improve the coating uniformity and paint adhesion as taught by Tomlinson.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ

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